globe. If ſo, the terms *electric per ſe*, and *non electric*, ſhould be laid aſide as improper: And (the only difference being this, that ſome bodies will conduct electric matter, and others will not) the terms *conductors* and *non-conductors* may ſupply their place. If any portion of electric matter is applied to a piece of conducting matter, it penetrates and flows through it, or ſpreads equally on its ſurface; if applied to a piece of non-conducting matter, it will do neither. Perfect conductors of electric matter are only metals and water, other bodies conducting only as they contain a mixture of thoſe; without more or leſs of which, they will not conduct at all.* This (by the way) ſhows a new relation between metals and water heretofore unknown.

To illuſtrate this by a compariſon, which, however, can only give a faint reſemblance. Electric matter paſſes through conductors as water paſſes through a porous ſtone, or ſpreads on their ſurfaces as water ſpreads on a wet ſtone; but when apply'd to non-conducters, 'tis like water dropt on a greaſy ſtone; it neither penetrates, paſſes through, nor ſpreads on the ſurface, but remains in drops where it falls. See farther on this head in my laſt printed piece.

Query. What are the effects of air in electrical experiments?

Anſwer. All I have hitherto obſerved are theſe. Moiſt
air

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* This propoſition is ſince found to be too general; Mr *Wilſon* having diſcovered that melted wax and roſin will alſo conduct.

air receives and conducts the electrical matter in proportion to its moiſture, quite dry air not at all: air is therefore to be claſs'd with the non-conductors. Dry air aſſiſts in confining the electrical atmoſphere to the body it ſurrounds, and prevents its diſſipating: for in vacuo it quits eaſily, and points operate ſtronger, *i. e.* they throw off or attract the electrical matter more freely, and at greater diſtances; ſo that air intervening obſtructs its paſſing from body to body, in ſome degree. A clean electrical phial and wire, containing air inſtead of water, will not be charged nor give a ſhock, any more than if it was fill'd with powder of glaſs; but exhauſted of air it operates as well as if fill'd with water. Yet, an electrical atmoſphere and air do not ſeem to exclude each other, for we breath freely in ſuch an atmoſphere, and dry air will blow through it without diſplacing or driving it away. I queſtion whether the ſtrongeſt dry N. Weſter would diſſipate it. I once electrified a large cork ball, at the end of a ſilk thread 3 foot long, the other end of which I held in my fingers, and whirl'd it round, like a ſling, 100 times in the air, with the ſwifteſt motion I could poſſibly give it, yet it retain'd its electrical atmoſphere, though it muſt have paſs'd through 800 yards of air, allowing my arm in giving the motion to add a foot to the ſemidiameter of the circle.—By quite dry air, I mean the dryeſt we have: for perhaps we never have any perfectly free from moiſture. An electrical atmoſphere raiſed round a thick wire, inſerted in a phial of air, drives out none of the air, nor

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